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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/532,531

04/25/2005

Atsushi Suzuki

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06/17/2008

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EXAMINER

HIGGINS, GERARD T

ART UNIT

PAPER NUMBER

1794

NOTIFICATION DATE

DELIVERY MODE

06/17/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

garycohn@seattlepatent.com

Office Action Summary	Application No. 10/532,531	Applicant(s) SUZUKI ET AL.	
	Examiner GERARD T. HIGGINS	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/13/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

On the Oath and Declaration submitted 04/25/2005 the signed name and the typewritten name for the third named inventor are not in agreement (Yoshio Yoshida vs. Tadashi Yoshida).

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because of the following statement:

"said glossy layer is formed by having the fine polymer particles in the polymer dispersion present in the ink absorbing layer maintain their particulate shapes." This same language is present in applicants' claim 1 and is awkward; furthermore, it is unclear how the particles of the glossy layer are also in the ink absorbing layer.

Correction is required. See MPEP § 608.01(b). See section 7 below.

5. The disclosure is objected to because of the following informalities:

a. The section at page 3, line 33 to page 4, line 2 contains the same language as is in applicants' Abstract; however, it is unclear how the particles of the glossy layer are also in the ink absorbing layer. See section 7 below.

b. The sentence at page 7, lines 16-20 is awkward.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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7. Claims 1-6 and 9-20 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Applicants are seeking to claim that "said glossy layer is formed by having the fine polymer particles in said polymer dispersion present ***in said ink absorbing layer*** maintain their particulate shape" (emphasis added); however, all other sections of the disclosure state that the glossy layer is separate from the ink absorbing layer. The Examiner deems that a glossy layer separate from the ink absorbing layer is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

The Examiner also directs applicants' attention to page 11, lines 8-21 of their specification, where applicants explain the limitations of this phrase. It is clear from this section that the polymer particles of the polymer dispersion are not present in said ink absorbing layer, but rather in the glossy layer.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 1, the term "maintain their particulate shape" in claim 1 is a relative term which renders the claim indefinite. The term "maintain their particulate shape" is not defined by the claim, the specification does not provide a standard for

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ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how much shape deformation is permitted before one would consider the particles to have lost their particulate shape (please see page 11, lines 8-10).

With regard to claims 1 and 2 and the phrase “styrene-acrylic type polymer,” it has been held that “[t]he addition of the word “type” to an otherwise definite expression (e.g., Friedel-Crafts catalyst) extends the scope of the expression so as to render it indefinite.” Please see MPEP 2173.05(b) and *Ex parte Copenhagen*, 109 USPQ 118 (Bd. App. 1955).

With regard to claims 7 and 8, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by “such as” and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claims 7 and 8 recites the broad recitation “forming an ink absorbing layer on the surface of a base material **or** on the surface of an underlayer,” and the claims also recite “wherein the main component of the ink absorbing layer is fine inorganic particles having an average particle diameter of from 10 nm to 500 nm **on said under layer**” (emphasis added), which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

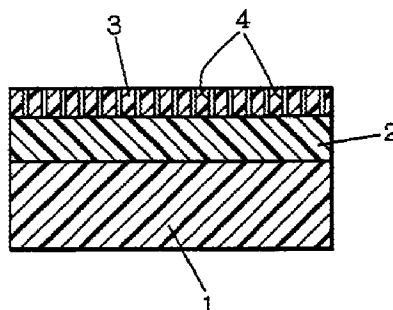
10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al. (6,177,181) in view of Watanabe et al. (WO 00/15552), of which US 6,632,489 is the national stage entry of the international application, and will be used as a translation.

With regard to claims 1 and 3, Hamada et al. discloses the device of Figure 1.

FIG. 1



The device comprises a base substrate **1**, an ink-absorbing layer **2**, and a porous top layer (glossy layer) **3** (col. 12, lines 19-25). The recording sheet is especially useful in inkjet recording systems (col. 17, lines 56-60). The porous top layer comprises hydrophilic polymers, which may be the same hydrophilic polymers used in the ink-absorbing layer (col. 16, lines 25-39). Hamada et al. disclose various hydrophilic polymers useful in the ink-absorbing layer that are comprised of copolymerizable monomers at col. 13, lines 26-58. They specifically state that the monomers may be used alone or as a combination of two or more at col. 13, lines 56-58. Included in this list of monomers is a cationic monomer N,N-diethylaminoethyl (meth)acrylate at col. 13, line 38, (meth)acrylamide at col. 13, lines 40-41, styrene at col. 13, line 51, and methyl methacrylate at col. 13, lines 33-35.

The porous top layer is prepared according to the process at col. 11, lines 7-51, which includes placing the polymerized monomers into a "good solvent" and a "poor solvent." These solvent have different affinities for the polymer as they are different polarities. The polymer containing solvent is then coated onto the base and is dried with the "good solvent" coming off first (col. 11, lines 13-22). As the "good solvent"

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evaporates the polymers form micelles (gel phase), which is equivalent to applicants' polymer dispersion. The dispersion of polymer particles proceeds to form a network structure comprising pores (col. 11, lines 19-22). Even though there is no disclosure that the porous layer is a glossy layer, given that the porous layer of Hamada et al. is identical to the presently claimed glossy layer, it is clear that the top layer of Hamada et al. would function as a glossy layer as presently claimed.

With regard to the ink absorbing layer, it may comprise the same hydrophilic polymers for the glossy layer, or it may comprise a simple vinyl alcohol binder (col. 12, line 32 to col. 13, line 58); additionally, it may be comprised of the inorganic particles (pigments) disclosed at col. 15, lines 40-59; however, Hamada et al. fail to disclose the average particle diameter of the inorganic particles in the ink absorbing layer.

Watanabe et al. disclose rosary (moniliform) shaped spherical colloidal silica, which is comprised of particles having a secondary diameter of 50 to 500 nm (D_1) and a primary diameter of 10 to 80 nm (D_2 , col. 4, lines 7-34). The particles are measured using dynamic light scattering method and BET methods, and typically Watanabe et al. express the particles as a ratio of D_1/D_2 , which represents the amount of linking (coagulation) that occurs (col. 6, lines 16-22).

Since Hamada et al. and Watanabe et al. are both drawn to ink receiving layers for inkjet recording media, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the pigments of Hamada et al. with the moniliform spherical colloidal silica of Watanabe et al. The results of such a substitution would have been predictable to one having ordinary skill in the art. The

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motivation for doing so can be found at col. 11, lines 42-49 of Watanabe et al., where they state that ink receiving layer comprised of their inventive silica and a binder will result in increased ink absorption, fast absorption speed, and an improved color development or ink.

With regard to claim 2, Hamada et al. do not explicitly state the particle sizes of their dispersion particles for the glossy layer; however, they do state the pore sizes and the transmission of light at 400 nm at col. 16, line 48 to col. 17, line 7. The Examiner deems that these pore sizes would intrinsically represent particle sizes of the polymer dispersions from 100 to 200 nm. The pore sizes of Hamada et al. have a broad range, but a highly transparent porous layer would have a mean pore size of 10 to 350 nm (col. 16, lines 57-62). The sizes of the pores would be directly related to the sizes of the particles and their packing ability. A simple algebraic evaluation of the interstitial area (pore area) of three coplanar adjacent spherical particles led the Examiner to the conclusion that the radius of the particles would intrinsically be $2.2\times$ as big as the diameter of the pore. While only an approximation, it does show that the pore sizes and particles sizes would intrinsically be in the same order of magnitude as each other, and therefore a pore size of 10 to 350 nm would intrinsically comprise a particle size of 100 to 200 nm.

The Examiner has additionally reason to believe that the particle sizes would intrinsically comprise 100 to 200 nm in the transmission of light at 400 nm. As stated by applicants in their specification (page 14, lines 1-6), a small particle diameter will lead to less scatter at shorter wavelength regions. Since the porous layer of Hamada et al. is

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highly transparent at 400 nm, it would lead one to conclude that it must intrinsically be comprised of small particles, including ones of 100 to 200 nm.

With regard to claim 4, since the glossy layer and ink absorbing layer are comprised of the same materials as claimed by applicants, the Examiner deems that the inkjet recording medium of Hamada et al. in view of Watanabe et al. would intrinsically comprise the specular gloss of applicants' claim 4.

With regard to claim 5, the Examiner deems the underlayer of applicants to be a mere duplication of parts. It has been held that "mere duplication of parts has no patentable significance unless a new and unexpected result is produced." Please see MPEP 2144.04 and *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). An underlayer comprised of binder and a pigment would function in the same manner as the ink absorbing layer, and therefore would aid the ink absorbing layer in absorbing ink and color-fastness.

With regard to claim 6, the mole fraction of each of the monomers included in the copolymerized glossy layer is disclosed at col. 14, lines 17-23 of Hamada et al. A mole fraction of from 0.1 to 50 mole% would intrinsically encompass 2 % to 30 % by weight; furthermore, it would have been obvious to vary the weight percentage of all the monomers in order to achieve a porous layer that had the proper amount of water resistance and provided the sharpest images.

With regard to claim 9, the Examiner has shown that the device of Hamada et al. in view of Watanabe et al. comprises the limitations of applicants' claim 2 and 3, and therefore it also renders obvious applicants' claim 9.

With regard to claims 10-12, the Examiner has shown that the device of Hamada et al. in view of Watanabe et al. comprises the limitations of applicants' claim 2, 3, 4, and 9, and therefore it also renders obvious applicants' claims 10-12.

With regard to claims 13-17, the Examiner has shown that the device of Hamada et al. in view of Watanabe et al. comprises the limitations of applicants' claim 2, 3, 4, 5, 9, and 12, and therefore it also renders obvious applicants' claims 13-17.

With regard to claims 18-20, the Examiner has shown that the device of Hamada et al. in view of Watanabe et al. comprises the limitations of applicants' claim 3, 4, 5, and 6, and therefore it also renders obvious applicants' claims 18-20.

With regard to claims 7 and 8, these are product-by-process claims. It has been held that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." Please see MPEP 2112 and *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

The Examiner has shown all of the article limitations with regard to these claims in the discussion of claim 1 above; however, the Examiner has not shown that the glossy layer has or has not undergone a calendering treatment. The disclosure of Hamada et al. in view of Watanabe et al. discloses drying the porous layer and does not

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mention a calendering treatment, which therefore means that the disclosures render obvious applicants' claim 8.

With regard to claim 7, calendering by applicants' own admission (page 2, lines 13-27) is a well-known treatment in inkjet recording media to increase the gloss of paper. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply any type of calendering treatment to improve the gloss of the inkjet recording medium of Hamada et al. in view of Watanabe et al. The results would have been completely predictable to one having ordinary skill in the art of papermaking. With regard to the temperature of the calendering treatment, it would have been obvious to one having ordinary skill in the art to choose any temperature, including the temperature claimed, as long as it was less than the T_g of the thermoplastic latex of the porous layer. If one heated the thermoplastic latex higher than the T_g it would proceed to melt and generate a continuous non-porous film, which would then render the inkjet recording medium unable to absorb ink.

12. Claims 5, 13-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al. (6,177,181) in view of Watanabe et al. (WO 00/15552) as applied to claims 1-4, 9, and 12 above, and further in view of Graczyk et al. (6,372,329).

With regard to claims 5 and 13-17, Hamada et al. in view of Watanabe et al. render obvious all of the limitations of applicants' claims 1-4, 9, and 12 in section 11 above. Additionally, they disclose the possibility of an ink-receiving layer of synthetic

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silica and PVA; however, they fail to include a specific reference to an underlayer comprised of synthetic silica and a hydrophilic binder.

Graczyk et al. disclose an inkjet recording medium comprised of two ink receiving layers that have a slightly different binder composition (please note that both binders are still hydrophilic in nature). The reason for doing this is explained at col. 4, lines 6-19, wherein the bottom layer is designed to quickly absorb ink vehicle fluids while the top layer is designed to absorb ink while preventing pigmented ink cracks from developing in the images; furthermore, the underlayer can be designed to provide good adhesion of the ink-receiving layers to the substrate. Graczyk et al. also disclose at col. 5, lines 10-29 that the ink-receiving layer may be comprised of ink-absorbing pigments, including synthetic silica.

Since Hamada et al. in view of Watanabe et al. and Graczyk et al. are all drawn to inkjet recording media, it would have been obvious to one having ordinary skill in the art at the time the invention was made to introduce the dual ink-receiving layers of Graczyk et al. as an ink absorbing layer and underlayer in the device of Hamada et al. in view of Watanabe et al. The results of such a combination would have been predictable to one having ordinary skill in the art; further, each of the elements would have performed the same in combination as they had separately. The motivation for doing so was mentioned above and includes a dual layer structure that provides for good adhesion of the ink absorbing layers to the substrate and a structure that quickly absorbs ink vehicle fluids.

With regard to claim 20, the proportion of each of the monomers included in the copolymerized glossy layer is disclosed at col. 14, lines 17-23 of Hamada et al., and includes the range claimed by applicants; furthermore, it would have been obvious to vary each of the proportions of all the monomers in order to achieve a porous layer that had the proper amount of water resistance and provided the sharpest images.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art is an additional reference concerning the "rosary-shaped" colloidal silica and a reference concerning microporous layers. The art cited on the search report is considered cumulative to the present rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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